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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,973	03/07/2005	Thierry Delvigne	Q86603	7987
23373 7590 03/22/2007 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER SOUW, BERNARD E	
			ART UNIT	PAPER NUMBER
			2881	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/22/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/526,973

Applicant(s)

DELVIGNE ET AL.

Examiner

Bernard E. Souw

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03/07/2005 (Transmittal).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 1 and 4-7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/14/2005</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), (FR 02 11050), filed 09/06/2002, which papers have been placed of record in the file.

Information Disclosure Statement

2. Receipt is acknowledged of information disclosure statement (IDS) submitted on 09/14/2005. The submission is in compliance with the provisions of 37 CFR 1.97.

A signed copy of the information disclosure statement is here enclosed.

Claim Objections

3. Claim 1 objected to because of the following informalities:

(a) Line 13 recites: [this method being one ...].

It would be better to say, "said method being one ...".

(b) Line 17 recites: [bringing these gases ...].

It would be better to say, "bringing said gases ...".

(c) Line 27 recites: [this detector (1) to ...].

It would be better to say, "said detector (1) to ...".

(b) Line 28 recites: [convert these measurements ...].

It would be better to say, "convert said measurements ...".

Appropriate correction is required.

4. Claim 7 objected to because of the following informalities:

- Line 23 recites: *[compound comprising **this** element;]*.

It would be better to say, "compound comprising **said** element;"

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2 and 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moore et al. (USPAT 3,471,696 /IDS/) in view of Lee et al. (USPAT 5,445,964), hereinafter Lee'964.

► Regarding claims 1 and 8, Moore et al. disclose a method or device for determination of the lubricating oil consumption of an internal combustion engine (10) shown in Fig.3, as recited in Col.6/ll.36-44, in which:

- the lubricating oil whose consumption is to be measured is labeled with a determined quantity of at least one radioactive tracer, as recited in Col.6/ll.26-35;

- downstream of the engine (i.e., exhaust pipes 50), the quantity of radioactive tracer(s) present in the gases emerging from the latter is measured, as expressly recited in Col.6/ll.38-41;

- and the lubricating oil consumption of the engine is deduced therefrom, as recited in Col.6/II.56-75 & Col.7/II.1-10, more specifically in Col.6/II.69-75 & Col.7/II.1-6;

said method being one characterized in that the measurement of the quantity of radioactive lubricating oil tracer(s) present in the gases emerging from the engine comprises:

- bringing these gases in contact with a trap (58) shown in more details in Fig.4, which can physically retain the radioactive tracer particles, as recited in Col.6/II.41-55;
- with the aid of a detector (66) sensitive to radiation emitted by the radioactive tracer(s) retained by the trap (58), as recited in Col.6/II.56-68, and --as can be seen in Fig.3-- placing the detector (66) at a distance from (i.e., immediately below) the trap (58), thus allowing the emitted radiation coming from the trap (58) to be continuously measured;
- and transmitting the measurements taken by the detector (66) to a scaler 48, as recited in Col.6/II.65-68, which can be converted into lubricating oil consumption rate according to process steps and formula recited in Col.6/II.69-75 & Col.7/II.1-5.

However, Moore et al. do not transmit the measurements taken by the scaler 48 to a programmed computer, as recited by claim 1. Instead, the result shown by scaler 48 has to be evaluated separately to convert the result of measurements into lubricating oil consumption rate of the engine according to process steps and formula recited in Col.6/II.69-75 & Col.7/II.1-5.

Lee'964 discloses a method or device for determination of lubricating oil consumption of an internal combustion engine by employing a trap and radioactive bromine as tracer, as recited in Col.1/II.56-63. Lee'964's measurement result is

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transmitted to a programmed computer (PC), as shown in Fig.1 and recited in Col.7/II.63-68 and Coil.8/II.1-2.

Although Lee'964 prefers laser diode spectroscopy to radioactive tracer method due to some health considerations recited in Col.1/II.63-66, Lee'964's objections of using the radioactive tracer method is effectively overcome by Moore et al. by employing low-level bromine tracer having 35 microCurie activity instead of 80 milliCurie, as expressly recited in Col.25-35.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Moore's alternative bromine method instead of Lee'964's laser diode spectroscopy, since Lee's health-related objections can be effectively removed by employing Moore's alternative technique of using low-level bromine tracer, as expressly taught by Moore et al. in Col.25-35.

One of ordinary skill in the art would have been motivated to use bromine tracer instead of Lee's diode spectroscopy technique, since the bromine tracer method is known to have important advantages, as taught by Moore et al. in Col.3/II.53-61.

The Examiner recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references (Moore et al. and lee'964). *In re Nomiya*, 184 USPQ 607 (CCPA 1975). However, there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re McLaughlin*, 170 USPQ 209 (CCPA 1971).

References are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures. *In re Bozek*, 163 USPQ 545 (CCPA) 1969. In this case, in combining Moore et al. with Lee'964 one does not simply take Moore's detection result directly to Lee'964's processor (PC), since Moore's result comes out from a scaler, whereas Lee'964's result comes from a diode laser absorption spectroscopy, such that the processing steps are different, but certainly well known in the art, as evidenced by Moore's formula recited in Col.7/ll.63-68 and Coil.8/ll.1-2.

► Regarding claims 2 and 9, Moore's trap 58 shown in Fig.4 includes at least one filtration element 64 formed by at least one filtering medium with a porous structure (molecular sieve pellets of ammonium sodium silicate), fixed in metal canning 60, as expressly recited in Col.6/ll.45-68.

► Regarding claim 10, Moore's trap (58) is placed on the combustion gas exhaust line (50) of the engine (10), as can be seen in Fig.3.

► Regarding claim 11, Moore's trap comprises a particle filter, as expressly recited in Col.7/ll.23-28.

► Regarding claim 12, "*ionizing radiation*" is defined in the art as "*high-energy radiation capable of producing ionization in substances through which it passes.*" It includes alpha radiation, beta radiation, electron radiation, cosmic ray, neutron radiation and X ray (see <<http://www.thefreedictionary.com/ionizing+radiation>>). Bromide compound as used by Moore et al. emits gamma radiation, as expressly recited in

Col.3/ll.53-58. Therefore, Moore's sodium-iodide scintillation detector 66 is per definition a probe for detection of ionizing radiation.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moore et al. in view of Lee'964, and further in view of Nature 210, 547-548 (1966).

Moore et al. as modified by Lee'964 disclose a method or device for determination of lubricating oil consumption of an internal combustion engine by employing a trap and short short-live bromine as radioactive tracer, as previously applied to the parent claim 1. However, neither Moore et al. nor Lee'964 teach to particularly use bromine-82 (or technetium 99m).

Fireman et al. teach that bromine-82 having a half-life of 36 HR is a good radioactive tracer just because of its short half-life, as recited in the Abstract, line 12.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use bromine-82 as radioactive tracer, since its short half-life would impose less health hazard to the user.

One of ordinary skill in the art would have been motivated to use short-life bromine-82 as a radioactive tracer in Moore's apparatus or method as modified by Lee'964's, since the short-life means that the radioactivity would remain in the system only for a short time.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moore et al. in view of Lee'964, and further in view of Hevesy and Levi (1936) (Wikipedia,

http://en.wikipedia.org/wiki/Neutron_activation_analysis) and Michael D. Glascock "An Overview of Neutron Activation Analysis", University of Missouri-Columbia, Research reactor center, http://web.missouri.edu/~glascockm/naa_over.htm

Moore et al. as modified by Lee'964 disclose a method or device for determination of lubricating oil consumption of an internal combustion engine by employing a trap and short short-live bromine as radioactive tracer, as previously applied to the parent claim 1. However, neither Moore et al. nor Lee'964 teach to particularly use of a tracer element , which has been neutron-activated and/or activated by a proton beam.

Hevesy and Levy (1936) teach that radioactive isotope form of (any) element can be created by neutron activation, as recited in "Neutron Activation Analysis", Wikipedia http://en.wikipedia.org/wiki/Neutron_activation_analysis, page 1/II.2-3 from bottom, and page 2/II.13-15.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form radioactive isotopes of any element by neutron activation, since the addition of one neutron does not change the atomic number, and hence, the element and its chemical properties do not change (forming the so-called radioactive isotope, "Neutron Activation Analysis" page 1/II.2-3 from bottom), such that the tracer element can be chosen as desired.

One of ordinary skill in the art would have been motivated to form radioactive isotopes of any desired element by neutron activation, since the type of tracer element and its half-life can be carefully chosen to be appropriate for the purpose envisioned.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moore et al. in view of Lee'964, and further in view of August P. (USPAT 2,833,261).

Moore et al. show all the limitations of claim 13, as previously applied to any one of parent claims 8-12, except the recitation of a filter being arranged on the combustion gas exhaust line between the trap and the point where these gases are discharged to the atmosphere.

August P discloses a filter arrangement for an internal combustion engine similar to Moore's, Lee'964's, as well as Applicant's. August's part(s) of the exhaust pipe is filled with filter material prior to discharging the exhaust gas into the atmosphere, as recited in August's claim 6, Column 8/ll.30-37.

It would have been an obvious to one of ordinary skill in the art to arrange a filter on the combustion gas exhaust line prior to discharging the exhaust gas to the atmosphere, i.e., after the trap but prior to discharge point, in order to filter out hazardous debris from the exhaust gas prior to discharging into the atmosphere.

One of ordinary skill in the art would have been motivated to filter out all hazardous debris from the exhaust gas prior to discharging into the atmosphere, as taught by August, in order to prevent radioactive tracer material that escaped the trap from contaminating the atmosphere.

Indication of Allowable Subject Matter

9. Claims 4-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Reasons for Indication of Allowable Subject Matter

10. The following is a statement of reasons for the indication of allowable subject matter:

- ▶ Claim 4 contains allowable subject matter for reciting that the technetium 99m is incorporated into the oil in the form of an aqueous solution of sodium pertechnate NaTcO₄.
- ▶ Claim 5 contains allowable subject matter for reciting that the technetium 99m is incorporated into the oil in the form of particles which have nanometric dimensions and are isolated from the atmosphere by carbon.
- ▶ Claim 6 contains allowable subject matter for reciting that the radioactive tracer incorporated into the lubricating oil is selected from germanium-68 and/or germanium-69, preferably in the form of at least one tetraalkyl germane containing at least germanium-68 and/or germanium-69.

Communications

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard E Souw, Ph.D., whose telephone number is

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571 272 2482. The examiner can normally be reached on Monday thru Friday, 9:00 am to 5:00 pm..


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on 571 272 2293. The central fax phone number for the organization where this application or proceeding is assigned is 571 273 8300 for regular communications as well as for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571 272 5993.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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March 09, 2007


ROBERT KIM
SUPERVISORY PATENT EXAMINER